



Scatter plots: Correlation and fitting a trend line

How to: Get a Random Sample from CensusAtSchool

Go to the CensusAtSchool [Random Sampler](#) to download a sample.X

Reference year: (select year) **Sample size:** At least 30 students

Select questions: Year level, Concentration Game

Location: Select Location **Year level:** All

To protect privacy there is a rule built into the sampler that the requested sample size cannot exceed 10% entered.



This task is designed to be completed by hand drawing a scatterplot. It can also be completed using Excel or a CAS calculator.

Task:

- Using your CensusAtSchool random sample, enter both sets of thirty numbers as:
 - ✓ a table in your workbook, or
 - ✓ two columns in Excel, or
 - ✓ two separate lists in your CAS calculator.

- Create a scatter plot with your data.
 - Think about which set of data is the independent and dependent variable
 - Plan your axes to include the highest and lowest values in the data
 - Include a title that includes the variable names.

- Look at your graph. Can you see any trend or pattern to the data?
Complete this sentence:

As school year level _____, concentration time

- Examine your scatter plot and circle the appropriate description:

Direction	Form		Strength	
Positive	Linear	Non-	Strong	Moderate
Negative	linear		Weak	

- Fit a trend line (sometimes called the line of best fit) to the data and complete the following sentence:



Each time the year level increases by 1 (year), the concentration time
_____ by _____ (seconds).

6. Estimate the value of the correlation coefficient (r) and explain what this indicates about the strength of the relationship.



Extension:

7. Use the Random Sampler to choose your own data to create a scatterplot.
8. Use linear regression to calculate the trend line and the correlation coefficient.

9. Explain what this correlation coefficient indicates about the strength of the relationship.
